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Region 3 Headquarters Bozeman, Montana 406-994-4042

March 19, 2019

To whom it may concern,

The Department of Montana Fish, Wildlife and Parks (FWP) is seeking comment on a proposed project to restore native Westslope Cutthroat Trout (WCT) to the headwaters of Tepee Creek. Comments on the proposed project will be used to guide the development of an Environmental Assessment under the Montana Environmental Policy Act

Tepee Creek is a tributary to Grayling Creek which originates in Yellowstone National Park approximately 20 Miles NNE of the town of West Yellowstone. Grayling Creek flows in a southerly direction and enters Hebgen Reservoir approximately 2.5 miles northwest of the junction of highways 287 and 291. (see attached map).

The proposed project is intended to restore genetically pure WCT to approximately seven miles of historically occupied stream habitat in the headwaters of Tepee Creek. Currently, Tepee Creek is occupied by a highly hybridized population of fish 52% WCT x 27% Yellowstone Cutthroat Trout (YCT) x 21% Rainbow Trout (RBT). It is presumed that non-native YCT were historically stocked in the headwaters of Tepee Creek early in the 20th century while RBT moved upstream from Hebgen Lake and lower Grayling Creek. All hybridized trout would be removed upstream of the barrier using an EPA-registered fish toxicant before restocking.

Before such a removal, an upstream migration barrier would be blasted along lower Tepee Creek (see attached map) to prevent the re-invasion of nonnative trout into the proposed recovery area. Construction of the fish barrier has been authorized under a Categorical Exclusion by the Hebgen Lake Ranger District in a Decision Memo dated June 11, 2015. While alterations would be made to the naturally occurring features of the stream channel, the modifications would retain a natural appearance. Implementation of the Forest Service's Decision Memo is contingent on MFWP's authorization to remove non-native trout and restock with genetically pure WCT. Any construction activities would be permitted as required by State and Federal statutes.

Once treated waters are deemed fishless, FWP proposes to reintroduce genetically pure WCT from neighboring populations within the upper Missouri River Basin. FWP anticipates that non-native fish removals would take two years and reintroduction of nearest neighbor WCT would take three years.

Westslope cutthroat trout are considered a species of concern by the State of Montana and a sensitive species by the U.S. Forest Service. Many similar projects have occurred within the upper Missouri River Basin in recent decades. Cumulatively, these projects help prevent the extinction of WCT and listing under the Endangered Species Act. Montana Fish, Wildlife & Parks is mandated through State of Montana statutes to conduct projects to improve the status of imperiled species. Additionally, Montana Fish, Wildlife & Parks Statewide Fisheries Management Plan specifies a goal of 20% occupancy and security of WCT in their historic range.

Montana Fish, Wildlife & Parks is requesting public input and comments on the proposed project by April 17, 2019. MFWP will determine the need for a public meeting(s) based on public interest. If you have any written comments regarding the proposed project, please mail them to Montana Fish, Wildlife & Parks, c/o Tepee Creek Restoration Comments, 1400 S. 19th Ave. Bozeman, MT 59718 or email Dave Moser (davemoser@mt.gov). If you have any questions regarding the proposed project, please call Dave Moser (FWP, Area Fisheries Biologist) at (406) 994-6938.

Thank you for your consideration of this proposed project to restore native fish to the waters of Montana.

Sincerely,

Mark Deleray
Region 3 Supervisor

Montana Department of Fish, Wildlife & Parks (FWP)

1400 South 19th Avenue, Bozeman MT, 59718

Draft Environmental Assessment

Environmental Assessment for the Reintroduction of Native Westslope Cutthroat Trout in Tepee Creek after removal of Non-native Trout with Rotenone

PART I: PROPOSED ACTION DESCRIPTION

A. Type of Proposed Action: Montana Fish, Wildlife and Parks (FWP) propose to reintroduce Westslope Cutthroat Trout (WCT) to Tepee Creek on the Custer-Gallatin National Forest. Tepee Creek is a tributary to Grayling Creek, a significant tributary to Hebgen Reservoir. Removal of non-native salmonids requires the use of rotenone, an EPA registered piscicide. Native WCT for reintroduction would be sourced from the Madison River drainage or suitable populations from other upper Missouri River basins. The proposed Action is dependent on the Connected Action (CA) of the Custer-Gallatin National Forest's construction of an upstream migration barrier which was approved in 2015 (Beaver Creek, Tepee Creek and Wildhorse Creek Westslope Cutthroat Trout Restoration Projects; U.S. Forest Service Custer-Gallatin National Forest Decision Memo 2015).

B. Agency Authority for the Proposed Action:

Powers of department relating to fish restoration and management.

The Montana Department of Fish, Wildlife and Parks (FWP) is mandated (§87-1-201(9)(a) Montana Code Annotated [MCA]) to implement programs that manage sensitive fish species in a manner that assists in the maintenance or recovery of those species, and that prevents the need to list the species under § 87-5-107 MCA or the federal Endangered Species Act. Section 87-1-201(9)(a), M.C.A.

(i) *manage wildlife, fish, game, and nongame animals in a manner that prevents the need for listing under or under the federal Endangered Species Act, 16 U.S.C. 1531, et seq.;*

(ii) manage listed species, sensitive species, or a species that is a potential candidate for listing under 87-5-107 or under the federal Endangered Species Act, 16 U.S.C. 1531, et seq., in a manner that assists in the maintenance or recovery of those species;

The restoration goal for WCT east of the Continental Divide (Upper Missouri River Basin upstream from and including the Judith River) as defined by the FWP State Wide Fisheries Management Plan, is to restore or secure conservation populations of WCT to 20% of their historic distribution (FWP 2012). FWP considers a population secure when isolation from non-native fishes is realized, typically by a physical fish barrier, have a population size of at least 2,500 fish, and occupy sufficient (5 to 6 miles) length of habitat to assure long-term persistence.

At present, WCT populations of >90% genetic purity are limited to approximately 8% of their historically occupied habitat range-wide.

C. Estimated Commencement Date: Late July 2019. At least one additional treatment will be necessary approximately one year after the first treatment to ensure the desired objective of eradicating hybrid trout.

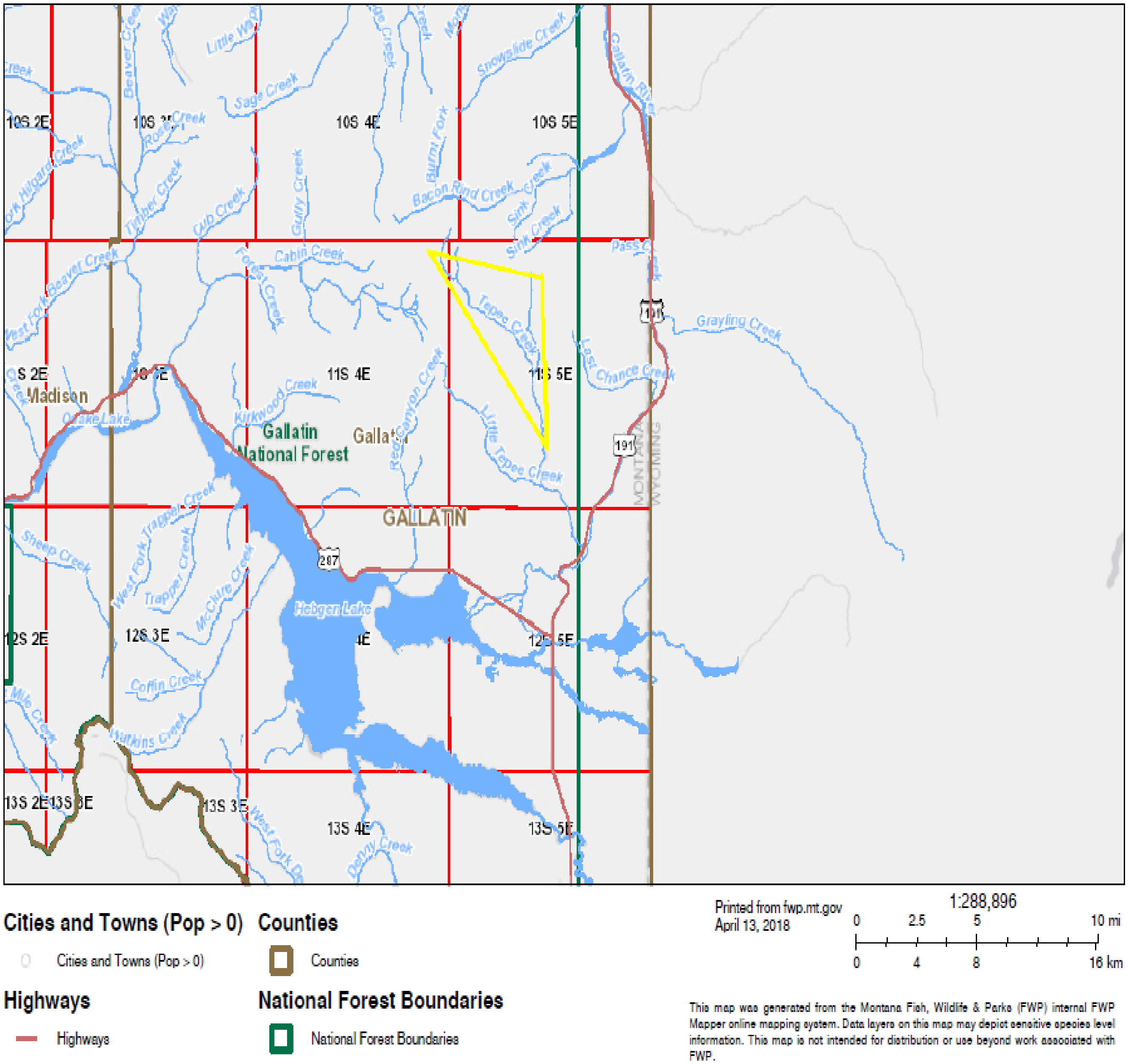
D. Name and Location of the Project: Reintroduction of native Westslope Cutthroat Trout in Tepee Creek by removal of non-native trout with the piscicide rotenone

The project site is located in Gallatin County approximately 20 miles south of the town of Ennis, MT; T9S R1W. Tepee Creek is a tributary to Grayling Creek (Figure 1). The portion of the stream that is proposed for rotenone treatment flows through property managed or owned by the Custer-Gallatin National Forest.

E. Project Size (acres affected)

1. Developed/residential – 0 acres
2. Industrial – 0 acres
3. Open space/Woodlands/Recreation – 0 acres
4. Wetlands/Riparian – The treated length of Tepee Creek and tributaries will be approximately 7.0 stream miles.
5. Floodplain – 0 acres
6. Irrigated Cropland – 0 acres
7. Dry Cropland – 0 acres
8. Forestry – 0 acres
9. Rangeland – 0 acres

Figure 1. Map depicting the location of Tepee Creek within the Madison River drainage. Yellow polygon is project area.



F. Narrative Summary of the Proposed Action and Purpose of the Proposed Action

Background and Need for the Proposed Action
Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi*), Montana's state fish, has declined in abundance, distribution, and genetic diversity throughout its native range (Shepard et al. 2003). Reduced distribution of WCT is particularly evident in the Missouri River drainage of Montana where genetically pure populations are estimated to persist in 4% of habitat they historically occupied. Major factors contributing to this decline include habitat changes, competition with nonnative brook (*Salvelinus fontinalis*), brown (*Salmo trutta*) and rainbow trout (*O. mykiss*), and hybridization with rainbow and Yellowstone cutthroat trout (*O. c. bouvieri*). Due to these threats, most remaining WCT populations in the Missouri River drainage are considered to have a low likelihood of long-term (100 years) persistence unless conservation actions are implemented (Shepard et al. 1997).

The declining status of WCT has led to its designation as a *Species of Special Concern* by the State of Montana, a *Sensitive Species* by the U.S. Forest Service (USFS), and a *Special Status Species* by the Bureau of Land Management (BLM). The U.S. Fish and Wildlife Service (USFWS) in 1997 submitted a petition to list WCT as "threatened" under the *Endangered Species Act* (ESA). USFWS status reviews found that WCT are "not warranted" for ESA listing (DOI 2003); however, this finding was litigated until 2008 and additional efforts to list WCT under ESA are still possible.

State and federal resource agencies (BLM, FWP, the USFS, and Yellowstone National Park [YNP]), non-governmental conservation and industry organizations, tribes, resource users, and private landowners developed a Memorandum of Understanding (MOU) and Conservation Agreement for WCT in Montana in 1999 (FWP 1999: MOU). The MOU outlined conservation objectives for WCT in Montana that would reduce the potential for special status designations and listing of WCT under the ESA. The MOU was revised and endorsed by signatories in 2007 (FWP 2007). The MOU states, *the primary management goal for WCT in Montana is to ensure the long-term self-sustaining persistence of the subspecies in its historical range*. Success of the management objective is accomplished through the maintenance, protection, and enhancement of all existing WCT "conservation" populations, and reintroduction of WCT into waters they historically occupied.

Project Details

Tepee Creek (T11S, R5E, and section 28) originates on the Custer-Gallatin National Forest approximately 12 miles north of West Yellowstone, MT. Tepee flows in SSE direction where it enters Grayling Creek which originates in Yellowstone National Park approximately 20 miles NNE of the town of West Yellowstone. Grayling Creek flows in a southerly direction and enters Hebgen Reservoir approximately 2.5 miles northwest of the junction of highways 287 and 291 (see attached Map). The project area is located within the Madison Inventoried Roadless Area (IRA 1-549).

The area of the drainage targeted for westslope cutthroat trout (WCT) reintroduction is the upper 7 miles of the Tepee Creek, mainstem, and tributaries located above a waterfall to be modified by the Custer-Gallatin National Forest into a migration barrier prior to project implementation. Fish barrier construction is considered a connected action to removal of non-native trout. The Custer-Gallatin Forest Service received approval to augment the unnamed waterfall 0.5 miles above its confluence of Little Tepee Creek to prevent upstream migration of non-native fish in a Decision Memo dated June 11, 2015 by District Ranger Cavan Fitizsimmons. The proposed action is categorically excluded from documentation in an environmental impact statement (EIS) or environmental assessment (EA): (36 CFR 220.6 – (e)(7). Which allows for the modification of maintenance of stream or lake aquatic habitat improvement structures using native materials or normal practices. This action is contingent upon environmental review under the Montana Environmental Protection Act and removal of non-native fish from waters above the barrier and reintroduction of native WCT.

Tepee Creek is currently occupied by a non-native trout population 52% WCT x 27% Yellowstone Cutthroat Trout (YCT) x 21% Rainbow Trout (RBT). It is presumed that non-native YCT were stocked in the headwaters several decades ago while RBT invaded upstream from Hebgen Lake and lower Grayling Creek.

The proposed project is intended to restore genetically pure WCT to 7 miles of historically occupied stream habitat in the headwaters of Tepee Creek using the EPA-registered fish toxicant rotenone. Rotenone is a commonly used piscicide that targets fish and is very effective with trout. Rotenone has no impact on terrestrial plants and animals and limited impacts to non-target aquatic organisms (aquatic insects and larval amphibians) at fish killing concentrations. FWP has used rotenone to manage fish populations in Montana waters since 1948, primarily for the purpose of native fish conservation.

Rotenone is a naturally occurring substance derived from the roots of tropical plants in the bean family (*Derris* spp.) and (*Lonchocarpus* spp.) that are found in Australia, southern Asia, and South America. Indigenous people of these areas have utilized these plants to capture fish for centuries. Rotenone has been used in fisheries management in North America since the 1930s.

Rotenone inhibits oxygen transfer at the cellular level. It is effective at low concentrations with fish and other gill breathing organisms, as it is readily absorbed across the thin cell layer of the gills into the bloodstream. As such, negative impacts on larval amphibians and aquatic invertebrates can result. Impacts to larval amphibians such as spotted frogs present in the proposed project area can be reduced by implementing the rotenone application in the summer (August or September) when most juveniles have metamorphosed into air-breathing adults. Air-breathing adult amphibians are not affected by rotenone at fish killing concentrations (Billman et al. 2011, 2012). Impacts to aquatic invertebrates have been shown to be temporary. While significant reductions in aquatic invertebrates can follow rotenone application, populations have been shown to recover within a year or two. Non-gill breathing organisms, such as mammals and birds, exhibit no effects to Rotenone at fish killing concentrations, because they do not possess the absorption route to bloodstream. The most common route of exposure to non-gill breathing animals is through ingestion. Rotenone is not well absorbed in the digestive tract and is readily broken down by digestive processes, thus terrestrial animals can tolerate exposure to concentrations much higher than those used to kill fish.

The label requirements for product concentration in streams is typically one-part rotenone formulation (5% rotenone) to one million parts water (1 ppm). The concentration of active rotenone is 50 parts per billion (ppb). The rotenone product proposed for use in Tepee Creek is CFT Legumine (5% rotenone). Spring areas may also be treated with the powder formulation of rotenone (Prentox, 7% rotenone) or a sand/powder mix to prevent fish from seeking these areas as freshwater refuges during the stream application. Tepee Creek will be treated using drip stations – containers that administer diluted CFT Legumine to the stream at a constant rate. These drip stations will apply rotenone to the stream at a rate of 1 ppm for 4 hours. Additionally, backwaters, spring areas, and small tributaries will be treated with backpack sprayers according to the CFT Legumine label specifications. The total amount of chemical to be applied to the stream is dependent on the flow of the stream and the distance downstream the chemical will remain active (which is determined by on-site testing before application). It is expected that fish killing concentrations of CFT Legumine will be present in the streams for 24 to 48 hours after application, after which time it will have naturally diluted and detoxified.

Rotenone can be detoxified through natural oxidation, dilution by freshwater, and introduction of a neutralizing agent such as potassium permanganate. To prevent rotenone from traveling downstream of the proposed treatment area, potassium permanganate will be used to neutralize any rotenone remaining in the stream below the fish barrier (see Comment 2a below). The CFT Legumine label states that a minimum of 20-30 min of contact time between rotenone treated waters and the applied neutralizing agent (potassium permanganate) is necessary to fully detoxify the rotenone. Because rotenone is not instantly detoxified downstream of the barrier site, a detoxification zone will be established. The detoxification zone is defined as the distance the stream travels in 30 minutes downstream of the fish barrier. Potassium permanganate is readily reduced by rotenone and natural processes in the stream, therefore permanganate will be applied to the stream at a rate that permanganate will persist at a concentration of 1ppm at 30min of travel time below the detoxification station. The determination of the appropriate amount of permanganate to fully neutralize any remaining rotenone is derived by on-site testing. Stream discharge will be measured prior to detoxification and the potassium permanganate will be applied at the rate of 3-5 ppm as specified on the CFT Legumine label.

Neutralization will commence in Tepee Creek according to the FWP Rotenone Detoxification Policy which states that detoxification with potassium permanganate should begin no less than 2 hours before the theoretical arrival time of treated waters at the detoxification station. Potassium permanganate will be directly measured in the water downstream of the application point using a colorimeter. A net concentration of approximately one ppm potassium permanganate will be maintained downstream at 30 minutes of stream travel distance to completely neutralize the rotenone. In addition to direct measurement of the potassium permanganate in the water, sentinel fish (trout from Tepee Creek) will be placed downstream of the detoxification zone to monitor the effectiveness of the detoxification station during the treatment. Sentinel fish will also be placed and monitored in the creek immediately upstream of the detoxification station to indicate when rotenone is no longer present in the stream and when detoxification is no longer required. Neutralization will continue until the theoretical time in which all treated waters will have passed the fish barrier and when sentinel fish above the detoxification station can survive for an additional four hours without signs of stress. Successful application of potassium permanganate will prevent any killing of non-target fish below the proposed project area.

Dead fish resulting from the treatment with CFT Legumine in the stream will be left on-site in the water. Studies in Washington State indicate that approximately 70% of rotenone-killed fish sink and do not float (Bradbury 1986) and decompose within a week or two. Dead fish stimulate plankton and other invertebrate growth and aid in invertebrate ecological recovery following treatment.

If all the non-native trout are not removed during the first treatment, a second treatment will be implemented to achieve the complete removal of non-native fish. To determine if complete fish removal is achieved, streams will be electrofished following treatment. In addition, environmental DNA (eDNA) sampling may be used to confirm electrofishing efforts or vice-versa. eDNA is a genetic tool that allows detection of fish through the detection of DNA released into the aquatic environment through the sloughing of skin or release of fecal matter. If a second treatment is necessary, work will be completed the following year. In the event that an additional treatment is necessary, landowners, stakeholders, and other interested parties will be notified.

To minimize the risk of the public being exposed to rotenone or treated waters, public access to trails in the area will be closed during application of rotenone, likely one week. Other potential access points (i.e., trails) will also be signed. Additional signs will be placed at stream crossings informing the public of treated waters and to keep out during rotenone application. Additionally, the timing of the treatment will be coordinated with anyone grazing livestock. Under FWP policy, rotenone treatments must be conducted when no livestock are present.

The transportation of personnel and equipment to the project site under the proposed action will be accomplished on foot and with a helicopter. The use of a helicopter will be required to get equipment to and from the treatment area due to its remote location.

<u>Funding</u>

Project personnel expenses will be covered under standard FWP budgets as a part of normal duties. Supplies and materials necessary for fish removal including CFT Legumine and potassium permanganate account for a small portion of overall project costs. No additional funding will be required for personnel services by FWP.

<u>PART II. ALTERNATIVES</u>

Alternative 1 – No action

The no action alternative will affect no change in the Tepee Creek Fishery. The hybrid trout fishery in Tepee Creek will remain the same. The “No Action” alternative will not fulfill the State’s obligation to ensure the long-term persistence of WCT distributed across its historical range (FWP 2007).

Although the “No Action” alternative will not meet the goals of WCT conservation, it will avoid any temporary impacts from increased foot and helicopter traffic. The selection of the “No

Action” alternative will not affect trail access for the week during piscicide treatment. Temporary impacts to non-target aquatic invertebrates and amphibians will be avoided, and there will be no temporary loss of non-native trout fisheries in Tepee Creek.

The “No Action” alternative does not meet the management goals of FWP for WCT and their long-term persistence. Hence, the “No Action” alternative is not considered the preferred alternative. The “No Action” alternative does not move the status of WCT populations in Montana in a direction away from further protection such as listing under the Endangered Species Act. Such a listing could have wide ranging ramifications on land use decisions, particularly on federal lands.

Alternative 2 – Proposed Action: Restoration of WCT in Tepee Creek through the removal of non-native trout using rotenone and restocking of Cutthroat Trout.

This alternative benefits WCT through an increase in number of stream miles inhabited by WCT. Approximately 7 miles of Tepee Creek and its tributaries will be treated with rotenone to remove non-native trout. Replication of at-risk populations within the Madison or equivalent drainage is important in reducing extinction risk. WCT obtained from local populations would used for re-introductions. Using locally adapted WCT populations would protect and preserve a portion of their genetic legacy.

Under the proposed action, non-native trout would be removed with rotenone. There will be some lost angling opportunity in the period after treatment and before Tepee Creek holds fishable populations within the treatment reach, typically 3 to 5 years.

Under this alternative, there would be an increased presence of fisheries personnel during piscicide treatments and during restoration efforts, typically two or three weeks for 2 to 3 years. Non-mechanized equipment will be the first choice in accessing the project area; however, a helicopter may be utilized to transport equipment to the project site.

Alternative 3 – Mechanically remove non-native trout from Tepee Creek.

Electrofishing has been used as a fish removal tool with success in small simplistic streams. Typically, a stream that is a candidate for electrofishing removals will be less than 2 miles in length and have very little complexity (woody debris, overhanging cover, and undercut banks). Electrofishing removals in small uncomplicated systems require multiple crews for two to three weeks a year for 3 to 6 years. The instream features, complexity, and size of Tepee Creek preclude mechanical removal as an option. Since the primary goal of this project is to reestablish a genetically pure WCT population, there can be zero tolerance for hybrids in the restored stream – i.e. one missed fish during removal could contaminate the genetic integrity of reintroduced WCT. This alternative was removed from further analysis because it will not meet the goals of the project.

PART III. ENVIRONMENTAL REVIEW

The index to comments provides textual detail on why impacts are unknown, nonexistent, minor, significant, and whether they can be mitigated.

A. PHYSICAL ENVIRONMENT

1. LAND RESOURCES Will the proposed action result in:	Impact Unknown	No Impact	Impact Minor	Impact Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Soil instability or changes in geologic substructure?		X				
b. Disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil which will reduce productivity or fertility?		X				
c. Destruction, covering or modification of any unique geologic or physical features?		X				
d. Changes in siltation, deposition or erosion patterns that may modify the channel of a river or stream or the bed or shore of a lake?		X				
e. Exposure of people or property to earthquakes, landslides, ground failure, or other natural hazard?		X				

DIRECT and INDIRECT IMPACTS

Proposed Action: Alternative 2

There will be no physical impacts to the Tepee Creek stream corridor other than slightly increased human traffic (i.e. bank trampling)

CUMULATIVE IMPACTS

The Tepee Creek drainage was picked primarily because of its remoteness, habitat quality and quantity (stream miles), and a suitable barrier site. The project area is located in an inventoried roadless area. Some land management occur within the project area on National Forest lands (Table 2). WCT restoration projects are typically limited to sites with an existing fish barrier or sites wherein a fish barrier is technically feasible. We know of no other opportunities like this in the Grayling Creek drainage. Yellowstone National Park, in an unconnected action, recently completed a project up Grayling Creek. There are no other plans to treat additional streams in the Grayling Creek drainage (Todd Koel pers. Comm.)

2. WATER Will the proposed action result in:	Impact Unknown	No Impact	Impact Minor	Impact Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Discharge into surface water or any alteration of surface water quality including but not limited to temperature, dissolved oxygen or turbidity?			X		Yes	2a
b. Changes in drainage patterns or the rate and amount of surface runoff?		X				
c. Alteration of the course or magnitude of flood water or other flows?		X				
d. Changes in the amount of surface water in any water body or creation of a new water body?		X				
e. Exposure of people or property to water related hazards such as flooding?		X				
f. Changes in the quality of groundwater?		X				2f
g. Changes in the quantity of groundwater?		X				
h. Increase in risk of contamination of surface or groundwater?			X		Yes	2a,f
i. Effects on any existing water right or reservation?		X				
j. Effects on other water users as a result of any alteration in surface or groundwater quality?		X				
k. Effects on other users as a result of any alteration in surface or groundwater quantity?		X				
l. Will the project affect a designated floodplain?		X				
m. Will the project result in any discharge that will affect federal or state water quality regulations? (Also see 2a)			X		Yes	2m

DIRECT and INDIRECT IMPACTS

Proposed Action: Alternative 2

Comment 2a: The proposed project is designed to intentionally introduce a piscicide to surface water to remove non-native trout. The impacts will be short term and minor. CFT Legumine 5% rotenone is an Environmental Protection Agency registered pesticide and is safe to use for removal of unwanted fish when handled and applied according to the product label. The concentration of rotenone proposed for use is 1 part CFT Legumine formulation to one million parts of water (ppm).

To reduce the impact of the piscicide on water quality outside of the project area, a detoxification station will be established immediately downstream of the barrier site. There are three ways in which rotenone can be detoxified once applied. The most common method is to allow natural breakdown to occur. Rotenone is a compound that is susceptible to natural breakdown (detoxification) through a variety of mechanisms such as water chemistry, water temperature, exposure to organic substances, exposure to air, and sunlight intensity (Ware 2002; ODFW 2002; Loeb and Engsrtom-Heg 1970; Engstrom-Heg 1972; Gilderhus et al. 1986). Rotenone persistence studies by Gilderhus et al. (1986) and Dawson et al. (1991) found that in cool water temperatures of 32 to 46ºF the half-life ranged from 3.5 to 5.2 days. Gilderhus et al. (1986) reported that 30% mortality was experienced in rainbow trout exposed to degrading concentrations of actual rotenone (0.004 ppm) in 46ºF pond water 14 days after a treatment. By day 18, the concentrations were sub-lethal to trout. Degradation in flowing water is typically faster due to physical agitation, highly aerated water, and constant exposure to sunlight (Brown 2010). The second method for detoxification involves basic dilution by fresh water. This is naturally accomplished by return of fresh ground water or surface water flowing into a lake or stream. The final method of detoxification involves the application of an oxidizing agent like potassium permanganate. This dry crystalline substance is mixed with stream or lake water to produce a concentration of liquid sufficient to detoxify the rotenone. Detoxification of rotenone is accomplished after about 15-30 minutes of exposure time between the two compounds (Prentiss Inc. 1998, 2007). FWP expects the stream will naturally detoxify within 24-48 hours after application of rotenone because of natural breakdown processes. FWP policy requires that potassium permanganate be used to detoxify any remaining rotenone present in the stream at the project terminus and prevent rotenone from traveling more than ¼ mile downstream of the fish barrier.

Dead fish will result from this project. Bradbury (1986) reported that 9 of 11 water bodies in Washington treated with rotenone experienced an algae bloom shortly after treatment. This is attributed to the input of phosphorus to the water from decaying fish. Bradbury further notes that approximately 70% of the phosphorus content of the fish stock will be released into the water through bacterial decay. This action may be beneficial because it will stimulate algae production and will start the stream toward production of food for fish. Any changes or impacts to water quality resulting from decaying fish will be short term and minor.

Comment 2f: No contamination of groundwater is anticipated to result from this project. Rotenone binds readily to sediments and is broken down by soil and in water (Skaar 2001; Engstrom-Heg 1971, 1976; Ware 2002). Rotenone moves only one inch in most soil types; the only exception will be sandy soils where movement is about three inches (Hisata 2002). In California, studies where wells were placed in aquifers adjacent to and downstream of rotenone applications have never detected rotenone, rotenolone, or any of the other organic compounds in the formulated products (CDFG 1994). Case studies in Montana have concluded that rotenone movement through groundwater does not occur. For example, at Tetrault Lake, Montana, neither rotenone nor inert ingredients were detected in a nearby domestic well which was sampled two and four weeks after applying 1.8 ppm rotenone to the lake. This well was chosen because it was down gradient from the lake and also drew water from the same aquifer that fed and drained the lake. In 1998, a Kalispell-area pond was treated with Prenfish 5% rotenone. Water from a well, located 65 feet from the pond, was analyzed and no evidence of rotenone was detected. In 2001, another Kalispell-area pond was treated with Prenfish 5% rotenone. Water from a well located 200 feet from that pond was tested four times over a 21-day period and showed no sign of contamination. In 2005, FWP treated a small pond near Thompson Falls with Prenfish to remove pumpkinseeds and bass. A well located 30 yards from the pond was tested, and neither Prenfish nor inert ingredients were found in the well. In Soda Butte Creek near Cooke City, a well at a Forest Service campground located 50 ft from a treated stream was tested immediately following and 10 months after treatment with Prenfish, and no traces of rotenone were found (Olsen 2006). Because rotenone is known to bind readily with stream and lake substrates, FWP does not anticipate any contamination of ground water as a result of this project.

Comment 2m: FWP will apply rotenone under the Montana Department of Environmental Quality (DEQ) General Permit for Pesticide Application (#MTG87000). A Notice of Intent was accepted by the Department of Environmental Quality for this project. The NOI included the waters proposed in this EA. A letter was received from DEQ dated August 13, 2012 recognizing the Notice of Intent and allowing FWP to operate under the General Permit for Pesticide Application.

By following the manufacturer's label and conditions of the general permit for pesticide application, the alterations in water quality will be within acceptable levels under the Clean Water Act and Montana's narrative and numeric water quality standards.

CUMULATIVE IMPACTS

Proposed Action: Alternative 2

The proposed action of piscicide treatment will have a short-term impact on water quality and invertebrate abundance (piscicides and increased localized turbidity, respectively) and potentially a longer-term impact on species community composition of primary and secondary producers in Tepee Creek. These impacts will attenuate through time and will not impact the productivity of fisheries resources after restocking. We do not expect the proposed action to result in other actions that will create cumulative impacts to water resources in Tepee Creek, nor do we foresee any other activities in the basin that will add to impacts of the proposed action. As such there are no cumulative impacts to water resources related to the treatment of Tepee Creek with piscicides.

3. AIR Will the proposed action result in:	Impact Unknown	No Impact	Impact Minor	Impact Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Emission of air pollutants or deterioration of ambient air quality? (also see 13 (c))		X				
b. Creation of objectionable odors?		X				3b
c. Alteration of air movement, moisture, or temperature patterns or any change in climate, either locally or regionally?		X				
d. Adverse effects on vegetation, including crops, due to increased emissions of pollutants?		X				
e. Will the project result in any discharge which will conflict with federal or state air quality regs?		X				

DIRECT and INDIRECT IMPACTS

Proposed Action: Alternative 2

Comment 3b: The advantage of CFT Legumine over other rotenone products that have been used in the past is that it has less petroleum hydrocarbon solvents such as toluene, xylene, benzene, and naphthalene. By comparison, Prenfish has a strong chemical odor. CFT Legumine is virtually odor-free and performs almost identically to older products (e.g., Prenfish, Noxfish).

A gasoline generator will be used to run a power auger at the lower end of the treatment area to dispense powdered potassium permanganate (detoxifying agent). The generator will produce some exhaust fumes that will dissipate rapidly.

Decaying fish may produce a short-term noxious smell. Previous treatments have shown dead fish decay rapidly and are difficult to find even after a few days post treatment.

CUMULATIVE IMPACTS

Proposed Action: Alternative 2

Impacts to air quality from the proposed actions will be short term and minor. FWP does not expect the proposed action to result in other actions that will create cumulative impacts to air quality near Tepee Creek. Nor does Montana Fish, Wildlife & Parks foresee any other activities in the basin that will add to impacts of the proposed action. As such, there are no cumulative impacts to air quality related to treatment of the proposed streams with piscicides.

4. VEGETATION Will the proposed action result in:	Impact Unknown	No Impact	Impact Minor	Impact Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Changes in the diversity, productivity or abundance of plant species (including trees, shrubs, grass, crops, and aquatic plants)?			X			4a
b. Alteration of a plant community?		X				
c. Adverse effects on any unique, rare, threatened, or endangered species?		X				4c
d. Reduction in acreage or productivity of any agricultural land?		X				
e. Establishment or spread of noxious weeds?		X				4e
f. Will the project affect wetlands, or prime and unique farmland?		X				

DIRECT and INDIRECT IMPACTS

Proposed Action: Alternative 2

Comment 4a: During treatment, workers will park on developed access roads and walk the stream corridor to their drip stations. There will be some trampling of vegetation along the stream during the placement and monitoring of drip stations and sentinel fish locations; however, the degree of impact to vegetation is not anticipated to affect plant vigor. Rotenone does not have an effect on plants at concentrations used to kill fish. Impacts from trampling vegetation are expected to be short term and minor.

Comment 4c: A search for species of special concern (S2 to S3, At Risk to Potentially at Risk) within Montana revealed the following have been reported in Gallatin County, Kruckeberg's Swordfern, Annual Indian Paintbrush, Slender Indian Paintbrush, Whitestem Goldenbush, Dwarf Purple Monkeyflower, Nodding Locoweed, Whipple's Beardtongue, Beaked Spikerush, Oregon Checker-mallow, Slender Thelypody, Dwarf Onion, Many-ribbed Sedge, Small-winged Sedge, and Small Dropseed. Small Wing Sedge and Small Dropseed are the only species at level G2, with very limited or declining populations globally. Ute Ladies' Tresses are listed as threatened under the Endangered Species Act and have been found in Gallatin County though not near Tepee Creek. Whitebark Pine is a candidate species under the Endangered Species Act. Whitebark Pine will not be affected by either fish barrier activities or piscicide application.

No impacts to these species are anticipated as a result of the proposed action. All rotenone products, including CFT Legumine, have no impacts on aquatic or terrestrial plant species at fish killing concentrations. Some trampling is possible due to increase foot traffic along the proposed streams; however, these impacts should be minimal because of existing USFS trails or game trails that provide good foot access to the sites. Increased cross country use by personnel will be limited spatially and temporally.

Comment 4e: Vehicles will receive an undercarriage wash to reduce the potential for spread of noxious weeds. If necessary, all helicopter landing/staging areas will be inventoried for noxious weeds and moved if any noxious weeds were found.

CUMULATIVE IMPACTS

Proposed Action: Alternative 2

Impacts to vegetation from the proposed action will be short term and minor. FWP does not expect the proposed action to result in other actions that will create cumulative impacts to vegetation in the proposed WCT restoration stream. If the new fisheries were to attract more recreational use, vegetation could potentially suffer from increased trampling. However, based on other similar WCT fisheries and their limited use, FWP will conclude that it is very unlikely that the new WCT fishery will attract significant interest and associated higher use levels. FWP does not foresee any other activities in the basin proposed for WCT restoration that will add to impacts of the proposed action. As such there are no cumulative impacts to vegetation related to the proposed action.

5. FISH/WILDLIFE Will the proposed action result in:	Impact Unknown	No Impact	Impact Minor	Impact Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Deterioration of critical fish or wildlife habitat?		X				
b. Changes in the diversity or abundance of game animals or bird species?			X		Yes	5b
c. Changes in the diversity or abundance of nongame species?			X		Yes	5c
d. Introduction of new species into an area?			X			5d
e. Creation of a barrier to the migration or movement of animals?		X				
f. Adverse effects on any unique, rare, threatened, or endangered species?			X			5f
g. Increase in conditions that stress wildlife populations or limit abundance (including harassment, legal or illegal harvest or other human activity)?			X			5g
h. Will the project be performed in any area in which TE&S species are present, and will the project affect any TE&S species or their habitat? (Also see 5f)			X		Yes	See 5f
i. Will the project introduce or export any species not presently or historically occurring in the receiving location? (Also see 5d)		X				

DIRECT and INDIRECT IMPACTS

Proposed Action: Alternative 2

Comment 5b: This project is designed to eradicate non-native trout in Tepee Creek upstream of a fish barrier (Figure 1). However, this impact is minor and temporary because WCT (also a game fish) will be restocked and will eventually repopulate the stream. Therefore, there will be no net loss of habitat occupied by self-sustaining populations of wild game fish. After removal of non-native trout, there will be a period of time when Tepee Creek and its tributaries will be fishless or hold low densities of trout (3-5 years).

When applied at fish killing concentrations, rotenone has no impact on terrestrial wildlife/game species including birds and mammals that consume dead fish or treated water.

Comment 5c:

<u>*Aquatic Invertebrates:*</u>

Numerous studies indicate that rotenone has temporary effects on aquatic invertebrates. The most noted impacts can be a substantial reduction in invertebrate abundance and diversity. In a study of the impacts of a rotenone treatment in Soda Butte Creek in South Central Montana, aquatic invertebrates of nearly all taxa declined dramatically immediately post rotenone treatment; however, only one year later nearly all taxa were fully recovered and at greater abundance than pre-treatment (Olsen and Frazer 2006). Another study reported that no long-term significant reduction in aquatic invertebrates was observed after application of double the normal application strength of rotenone (Houf and Campbell 1977). Chandler and Marking (1982) found that clams and snails were between 50 and 150 times more tolerant than fish to Noxfish (5% rotenone formulation). In all cases, the reduction of aquatic invertebrates was temporary, and most treatments used a higher concentration of rotenone than proposed for these projects (Schnick 1974). In a study on the relative tolerance of different aquatic invertebrates to rotenone, Engstrom-Heg et al. (1978) reported that the long-term impacts of rotenone are mitigated because those insects that were most sensitive to rotenone also tended to have the highest rates of reproduction and recolonization. Temporary changes in aquatic invertebrate community structure due to a rotenone treatment could be similar in magnitude to what is observed after natural (e.g. fire) and anthropogenic (livestock grazing) disturbances (Wohl and Carline 1996; Mihuc and Minshall. 2005; Minshall 2003), though the physical impacts and resulting modifications of invertebrate assemblages after these types disturbances can last for a much longer period than a piscicide treatment.

Because of their short life cycles (Anderson and Wallace 1984), good dispersal ability (Pennack 1989), and generally high reproductive potential (Anderson and Wallace 1984), aquatic invertebrates are capable of rapid recovery following disturbance (Boulton et al. 1992; Matthaei et al. 1996). Headwater reaches and tributaries to the proposed WCT restoration streams that do not hold fish will not be treated with rotenone and will provide a source of aquatic invertebrate colonists that could drift downstream. In addition, recolonization will include aerially dispersing invertebrates from upstream and downstream areas (e.g. mayflies, caddisflies, dipterans, stoneflies).

Based on these studies, FWP will expect the aquatic invertebrate species composition and abundance in the streams proposed for treatment with CFT Legumine to return to pre-treatment diversity and abundance within one to two years after treatment.

In Montana, aquatic invertebrates are routinely collected prior to WCT restoration projects in mountains streams. In all cases, these collections have shown aquatic invertebrate assemblages typical of headwater streams in North Western Montana, and in no cases have threatened or endangered species been discovered. FWP expects that the proposed streams contain a similar aquatic invertebrate assemblage as found in other nearby streams and the possibility of eliminating a rare or endangered species is minimal. Rare or endangered species are typically found in novel habitats, including glacier melt (e.g. *Lednia spp.*stoneflies) and hot springs. Tepee Creek exhibits typical spring snowmelt characteristics and will likely host a common assemblage of invertebrates. Aquatic invertebrates will be collected from the stream prior to treatment with rotenone and 1 year post treatment to monitor the recovery of aquatic invertebrate populations.

Birds and Mammals:

Mammals are generally not affected by rotenone at fish killing concentrations because they neutralize rotenone by enzymatic action in their stomach and intestines (AFS 2002). Studies of risk for terrestrial animals found that a 22 pound dog will have to drink 7,915 gallons of treated lake water within 24 hours, or eat 660,000 pounds of rotenone-killed fish, to receive a lethal dose (CDFG 1994). The State of Washington reported that a half pound mammal will need to consume 12.5 mg of pure rotenone to receive a lethal dose (Bradbury 1986). Considering the only conceivable way an animal can consume rotenone under field conditions is by drinking lake or stream water or consuming dead fish, a half-pound animal will need to drink 16 gallons of water treated at 1 ppm CFT Legumine.

The EPA (2007) made the following conclusion for small mammals and large mammals;

> *When estimating daily food intake, an intermediate-sized 350 g mammal will consume about 18.8 g of food. Using data previously cited from the common carp with a body weight of 88 grams, a small mammal will only consume 21% (18.8/88) of the total carp body mass. According to the data for common carp, total body residues of rotenone in carp amounted to 1.08 µg/g. A 350-g mammal consuming 18.8 grams represents an equivalent dose of 20.3 µg of rotenone; this value is well below the median lethal dose of rotenone (13,800 µg) for similarly sized mammals. When assessing a large mammal, 1000 g is considered to be a default body weight. A 1,000g mammal will consume about 34 g of food. If the animal fed exclusively on carp killed by rotenone, the equivalent dose will be 34 g *1.08 µg/g or 37 µg of rotenone. This value is below the estimated median lethal equivalent concentration adjusted for body weight (30,400 µg). Although fish are often collected and buried to the extent possible following a rotenone treatment, even if fish were available for consumption by mammals scavenging along the shoreline for dead*

or dying fish, it is unlikely that piscivorous mammals will consume enough fish to result in observable acute toxicity.

Similar results determined that birds required levels of rotenone at least 1,000 to 10,000-times greater than is required for lethality in fish (Skaar 2001). Cutkomp (1943) reported that chickens, pheasants, and members of lower orders of *Galliformes* were quite resistant to rotenone, and four day old chicks were more resistant than adults. Ware (2002) reports that swine are uniquely sensitive to rotenone and it is slightly toxic to wildfowl, but to kill Japanese quail required 4,500 to 7,000 times more than is used to kill fish.

The EPA (2007) made the following conclusion for birds;

> *Since rotenone is applied directly to water, there is little likelihood that terrestrial forage items for birds will contain rotenone residues from this use. While it is possible that some piscivorous birds may feed opportunistically on dead or dying fish located on the surface of treated waters, protocols for piscicidal use typically recommend that dead fish be collected and buried, rendering the fish less available for consumption (see Section IV). In addition, many of the dead fish will sink and not be available for consumption by birds. However, whole body residues in fish killed with rotenone ranged from 0.22 μg/g in yellow perch (Perca flavescens) to 1.08 μg/g in common carp (Cyprinus carpio; Jarvinen and Ankley 1998). For a 68 g yellow perch and an 88 g carp, this represents totals of 15 μg and 95 μg rotenone per fish, respectively. Based on the avian subacute dietary* LC_{50} *of 4,110 mg/kg, a 1,000-g bird will have to consume 274,000 perch or 43,000 small carp. Thus, it is unlikely that piscivorous birds will consume enough fish to result in a lethal dose.*

The primary disturbance to threatened species or species of special concern will be associated with presence of humans, transport of gear and supplies by helicopter. This increase in noise and human presence will be of short duration, lasting no more than 5 days. This activity and presence will likely result in temporary displacement of most species if they were occupying the project area before the project began. If the project were not successful in the first year, a second round of piscicide application will occur the following year. None of the project activities will affect the habitat of these species or alter their food base. The presence of dead fish will increase scavenging by species prone to consuming carrion. As discussed in Comment 5c: Changes in the Diversity or Abundance of Nongame Species, exposure to rotenone from drinking water or eating dead fish or invertebrates does not pose a threat given the exceedingly low concentration of rotenone in water and dead animal tissues, and the rapid breakdown of the rotenone in the environment

<u>*Amphibians and Reptiles:*</u>

Rotenone can be toxic to gill breathing larval amphibians, though air breathing adults are less sensitive. Chandler and Marking (1982) found that Southern Leopard frog tadpoles were between 3 and 10 times more tolerant than fish to Noxfish (5% rotenone formulation). Grisak et al. (2007) conducted laboratory studies on Long-Toed Salamanders, Rocky Mountain Tailed frogs (*Ascaphus truei*), and Columbia Spotted frogs and concluded that the adults of these species will not suffer an acute response to Prenfish at trout killing concentrations (0.5-1 ppm) but the larvae could be affected. Billman et al. (2011, 2012) also found impacts of rotenone on larval amphibians. These authors recommended implementing rotenone treatments at times when the larvae are not present, such as the fall, to reduce the chance of exposure to rotenone treated water and potential impacts to larval amphibians. The proposed stream will be scheduled for treatment in August or September which will reduce but not eliminate potential impacts to larval amphibians. Any reduction in amphibian abundance will be expected to be short term because of the low sensitivity of adults to rotenone, and because most larval amphibians, with the exception of tailed frogs, will have metamorphosed by August and September, when the treatment is planned. Billman et al. (2012) found that while larval amphibians present during field applications of rotenone suffered high mortality, numbers the following year were similar to pre-treatment levels. Based on this information FWP will expect the impacts to non-target amphibians and reptiles in the streams proposed for WCT restoration to range from non-existent to short term and minor.

Comment 5d: WCT are native to Tepee Creek in the proposed project area. Therefore, following non-native trout removal, WCT will be introduced upstream of the fish barrier. There should be no impacts resulting from WCT introduction beyond those present for the current non-native trout fisheries because the species occupy similar aquatic niches.

Comment 5f:

<u>*Terrestrial Organisms:*</u>

Wolverines have been reported in the general area of the proposed project. Observations of wolverines have occurred within the general area within the past 10 years (Montana Natural Heritage Field Guide). Their density in the area is likely to be low with few observations reported. Wolverines occupy alpine areas, and coniferous or boreal forests. They typically have large home ranges and low densities - one per 25 square miles (Cegelski et al. 2003). Project activities, including piscicide application and fish reintroduction, will be short-term and have minor displacement effects on wolverines should they be present during the project. Given their tendency to be wide-ranging, temporary displacement, in the event they are occupying the project area, will result in them leaving a small portion of their home range. This disturbance will be of short duration, lasting no more than 5 days.

Canada Lynx are listed as threatened on under the Endangered Species Act. They may occur in low densities near the proposed project; however, there have been few observations of Canada Lynx in the project area. This species is non-migratory but is wide ranging and movements of up to 125 miles have been recorded for Canada Lynx in Montana (Hash 1990). Snowshoe Hare are the preferred prey item of the Canada Lynx; however, they will also consume mountain grouse, a variety of rodents, shrews, and occasionally will prey on ungulates and consume carrion.
The effect of this project on Canada Lynx will likely be short-term and minor. Given their large home ranges, the potential to encounter a Lynx is small. The presence of humans, horses, and a helicopter may result in temporary displacement during the 4 to 5 days of the project. The piscicide treatment will not have an effect on most of their prey species, although as occasional

consumers of carrion, they may feed on dead fish. As with other mammals, the dose of rotenone resulting from opportunistic feeding is thousands of times lower than toxic levels.

The grizzly bear is another listed species with considerable potential to occur in the project area. The Montana Natural History Program field guide data indicate they are present at relatively high densities and sightings have been recent. Although project activities, such as the use of helicopters, may temporarily displace bears, habituated bears may stay near the project area. Grizzly bears pose a much larger threat to fieldworkers than the project poses to grizzly bears. Fieldworkers will be required to carry bear spray. To minimize the potential for conflict with grizzly bears, field crews will adhere to requirements outlined in the U.S. Department of Agriculture FS Food Storage Special Order LC-00-18. These requirements call for storing food for humans and livestock in a bear-resistant manner and packing out any leftover food and garbage. In addition, piscicide containers will be securely stored. Storing food properly, keeping a clean camp, and maintaining an audible presence while in the field will reduce the potential for bear encounters and reduce the possibility of habituation. Given these protective measures, effects on grizzly bears will be short-term and minor. The piscicide treatment will not have an effect on most of their prey species, although as occasional consumers of carrion, they may feed on dead fish. As with other mammals, the dose of rotenone resulting from opportunistic feeding is thousands of times lower than toxic levels.

Aquatic Organisms:

Westslope Cutthroat Trout, including some populations of slightly non-native WCT, are considered a sensitive species and a species of special concern. The intent of the Proposed Action is to conserve WCT by expanding their range into Tepee Creek (7 miles of stream). It will also conserve locally adapted gene complexes that could be used in future reintroduction or restoration projects. Therefore, the expected outcome of the proposed project will be greatly beneficial to the long-term conservation of WCT.

The possibility of eliminating a rare or endangered species of aquatic invertebrate in the proposed streams by treating with rotenone at proposed concentrations is very unlikely. The Montana Natural Heritage Program lists no species of concern or potential species of concern of aquatic invertebrates in immediate Tepee Creek drainage. A search for species of special concern using the Montana Natural History Program database (S2 to S3, At Risk to Potentially at Risk) within Montana revealed the following have been reported in Gallatin County, Frigga Fritillary Butterfly, Hooked Snowfly, Springs Stripetail, Striate Disc, Western Pearlshell Mussel. The Frigga Butterfly and other aforementioned invertebrates are not globally rare and are common throughout their extended range. Western Pearlshell Mussels have not been found in Tepee Creek. FWP policy requires the collection of aquatic invertebrate samples prior to piscicide treatment. In the unlikely event any of these species were present they would not be eliminated from the entirety of Tepee Creek.

Reptiles and Amphibians:

Potential species of special concern within the amphibian and reptile groups observed in Gallatin County, are limited to, Western Toad *(Anaxyrus boreas)*, Plains Spadefoot *(Spea bombifrons)*, Greater Short-horned Lizard *(Phrynosoma hernandesi*) (Montana Natural History Program). Other reptiles and amphibians found within the proposed treatment areas include, Columbia Spotted Frog (*Rana pretiosa*), Western Terrestrial Garter (*Thamnophis elegans*), Common Garter (*T. sirtalis*), and Rubber Boa (*Charina bottae*). The two species of gartersnake, likely occur along Tepee Creek and its tributaries, and a reduction in aquatic based food may affect these snakes, although these species are generalists and will still have forage from terrestrial sources. Similarly, the Columbian Spotted Frog regularly forages along stream margins. Effects on these reptile and amphibian predators will likely be short-term and minor, with temporary displacement or reductions in population size.

Comment 5g. There is the potential for displacement of some animals during the implementation of this project (see Comment 5f). Mule deer, elk, moose and potentially other big game species and species mentioned above (Comment 5f) may be temporarily displaced as crews are present in the drainage performing the proposed work. However, these impacts should only be minor and temporary. The total treatment should be completed within 4-6 days.

The Forest Service is required to analyze and disclose the potential effects or impacts of the proposed project on sensitive and threatened species. Table 3 is a summary of the effects determinations made for each of the previously listed aquatic, terrestrial and avian species. The complete Biological Evaluations and Biological Assessments are included within the project file and are available upon requested.

Table 3. Summary of effects determinations for each of the aquatic, terrestrial and avian sensitive and threatened species.

Class	***Class Common***	***Scientific Name***	***U.S. Forest Service Status***	***Project Determinations***
Amphibia	Western toad	*Anaxyrus boreas*	Sensitive	MIIH
	Northern leopard frog	*Rana pipiens*	Sensitive	NI
	Plains spadefoot	*Spea bombifrons*	Sensitive	NI
Bivalvia or Mollusks	Western pearlshell mussel	*Margaritifera falcata*	Sensitive	NI
Fish	Westslope Cutthroat Trout	*Oncorhynchus clarkii lewisi*	Sensitive	BI
Aves	Harlequin duck	*Histrionicus histrionicus*	Sensitive	NI
	Bald eagle	*Haliaeetus leucocephalus*	Sensitive	NI
	American peregrine falcon	*Falco peregrinus anatum*	Sensitive	NI
	Black-backed woodpecker	*Picoides arcticus*	Sensitive	NI
	Flammulated owl	*Otus flammeolus*	Sensitive	NI
	Trumpeter swan	*Cygnus buccinator*	Sensitive	NI
Mammalia	Townsend’s big-eared bat	*Corynorhinus townsendii*	Sensitive	NI
	Gray wolf	*Canis lupis*	Sensitive	MIIH
	Bighorn sheep	*Ovis canadensis*	Sensitive	NI
	North American wolverine	*Gulo gulo luscus*	Proposed	Not Likely to Jeopardize the continued existence of the wolverine
	Grizzly bear	*Ursus arctos*	Threatened	NLAA

Lynx	*Lynx canadensis*	Threatened	NLAA
Lynx	*Lynx canadensis*	Critical Habitat	NE

<u>Biological Evaluation Determinations for Forest Service Sensitive Species</u>

- **NI** = **N**o **I**mpact
- **MIIH** = **M**ay **I**mpact **I**ndividuals or **H**abitat, but will not likely contribute to a trend towards Federal listing or loss of viability to the population or species
- **WIFV** = **W**ill **I**mpact individuals or habitat with a consequence that the action may contribute to a trend towards **F**ederal listing or cause a loss of **V**iability to the population or species
- **BI** = **B**eneficial **I**mpact

<u>Biological Assessment Determinations for Federally ESA Listed Species</u>

- **NE** = **N**o **E**ffect
- **NLAA** = May affect, but **N**ot **L**ikely to **A**dversely **A**ffect
- **LAA** = May affect, and is **L**ikely to **A**dversely **A**ffect

CUMULATIVE IMPACTS

Proposed Action: Alternative 2

Impacts to fish and wildlife from the proposed action will be short term and minor. Montana FWP does not expect the proposed action to result in other actions that will create cumulative impacts to fish and wildlife resources within the project area. If the new fishery attracts more recreational use, fish and wildlife resources could potentially suffer from the increased presence of humans. However, based on use patterns of other WCT fisheries, FWP will conclude that it is very unlikely that the new WCT fishery will attract significant interest and associated higher use levels. The current non-native trout fishery will be replaced by WCT fisheries that occupy a similar niche and will provide similar ecological functions and provide for similar angling opportunities. FWP does not foresee any other activities in the basin that will add to impacts of the proposed action. As such there are no cumulative impacts to non-target organisms related to construction and the treatment of the proposed stream.

B.HUMAN ENVIRONMENT

6. NOISE/ELECTRICAL EFFECTS Will the proposed action result in:	Impact Unknown	No Impact	Impact Minor	Impact Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Increases in existing noise levels?			X		Yes	6a
b. Exposure of people to severe or nuisance noise levels?			X			6a
c. Creation of electrostatic or electromagnetic effects that could be detrimental to human health or property?		X				
d. Interference with radio or television reception and operation?		X				

DIRECT and INDIRECT IMPACTS

Proposed Action: Alternative 2

Comment 6a: Noise levels will increase temporarily in the event a helicopter is used to access the treatment area. A gasoline powered generator will be used to apply potassium permanganate at the fish barrier site. Other application equipment that will be used during the treatment is not mechanized and produces no noise. These impacts should be minor and temporary as the use of the helicopter is expected to last only 1 to 2 days. The noise impacts are anticipated to only affect wildlife species because the drainage will be closed to public access during the application of rotenone. Noise effects on wildlife are expected to be only minor and temporary. It should be noted that FWP biannual helicopter flights occur over numerous wilderness areas during the stocking of high elevation lakes with WCT.

7. LAND USE Will the proposed action result in:	Impact Unknown	No Impact	Impact Minor	Impact Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Alteration of or interference with the productivity or profitability of the existing land use of an area?		X				
b. Conflicted with a designated natural area or area of unusual scientific or educational importance?		X				
c. Conflict with any existing land use whose presence will constrain or potentially prohibit the proposed action?			X			7c
d. Adverse effects on or relocation of residences?		X				

DIRECT and INDIRECT IMPACTS

Proposed Action: Alternative 2

Comment 7c: During treatment with rotenone, public access to the project areas will be closed for several days to prevent public exposure to rotenone. The length of the closure will depend on the amount of time it takes to complete the treatment but will not exceed 7 days. Other trails that directly access Tepee Creek may also be closed. The label for CFT Legumine states that detoxification should be terminated when replenished fish survive and show no signs of stress for at least four hours. FWP expects the treated waters in Tepee Creek to be non-toxic to fish in 24-48 hours after the application of rotenone. Therefore, it can reasonably be expected that any closures will last less than 7 days. The treatment will be implemented in late summer (August) to avoid potential conflicts with Montana big game hunting seasons.

CUMULATIVE IMPACTS

Proposed Action: Alternative 2

Impacts on land use from the proposed action would be short term and minor. FWP does not expect the proposed action to result in other actions that would impact land use in the proposed WCT restoration stream. FWP does not foresee any other activities in the basin that would add to impacts of the proposed action. As such there are no cumulative impacts related to land use from the proposed treatment of the proposed stream with piscicides.

8. RISK/HEALTH HAZARDS Will the proposed action result in:	Impact Unknown	No Impact	Impact Minor	Impact Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Risk of an explosion or release of hazardous substances (including, but not limited to oil, pesticides, chemicals, or radiation) in the event of an accident or other forms of disruption?			X		Yes	8a
b. Affect an existing emergency response or emergency evacuation plan or create a need for a new plan?			X		Yes	8b
c. Creation of any human health hazard or potential hazard?			X		Yes	see 8a,c
d. Will any chemical toxicants be used?			X		Yes	see 8a

DIRECT and INDIRECT IMPACTS

Proposed Action: Alternative 2

Comment 8a: The principal risk of human exposure to hazardous materials from this project will be limited to the applicators of the rotenone. To limit exposure, all applicators will wear safety equipment required by the product label and MSDS sheets. Such safety equipment may include respirators, goggles, waders, Tyvek overalls, and Nitrile gloves. All applicators will be trained on the safe handling and application of the piscicide. At least one Montana Department of Agriculture certified piscicide applicator will supervise and administer the project. A second independent applicator will verify that all label requirements and FWP Piscicide Policy is followed. Materials will be transported, handled, applied, and stored according to the label specifications to reduce the probability of human exposure or spill. See also Comment 8c for other review of risks to general public.

Comment 8b: FWP requires a treatment plan for rotenone projects. This plan addresses many aspects of safety for people who are on the implementation team such as establishing a clear chain of command, training, delegation and assignment of responsibility, clear lines of communication between members, a spill contingency plan, first aid, emergency responder information, personal protective equipment, monitoring and quality control, among others.

Implementing this project should not have any impact on existing emergency plans. Because an implementation plan has been developed by FWP, the risk of emergency response is minimal and any affects to existing emergency responders will be short term and minor.

Comment 8c: The EPA (2007) conducted an analysis of the human health risks for rotenone and concluded it has a high acute toxicity for both oral and inhalation routes but has a low acute toxicity for dermal route of exposure. It is not an eye or skin irritant nor a skin sensitizer. The EPA could not provide a quantitative assessment of potentially critical effects on neurotoxicity risks to rotenone users, so a number of uncertainty factors were assigned to the rating values. They are; an additional 10x database uncertainty factor, in addition to the inter-species (10x) uncertainty factor and intra-species (10x) uncertainty factor, has been applied to protect against potential human health effects and the target margin of exposure (MOE) is 1000. The following table summarizes the EPA toxicological endpoints of rotenone (from EPA 2007);

Exposure Scenario	**Dose Used in Risk Assessment, Uncertainty Factor (UF)**	**Level of Concern for Risk Assessment**	**Study and Toxicological Effects**
Acute Dietary (females 13-49)	NOAEL = 15 mg/kg/day UF = 1000 aRfD = 15 mg/kg/day = 0.015 mg/kg/day 1000	Acute PAD = 0.015 mg/kg/day	Developmental toxicity study in mouse (MRID 00141707, 00145049) LOAEL = 24 mg/kg/day based on increased resorptions
Acute Dietary (all populations)	An appropriate endpoint attributable to a single dose was not identified in the available studies, including the developmental toxicity studies.		
Chronic Dietary (all populations)	NOAEL = 0.375 mg/kg/day UF = 1000 cRfD = 0.375 mg/kg/day = 0.0004 mg/kg/day 1000	Chronic PAD = 0.0004 mg/kg/day	Chronic/oncogenicity study in rat (MRID 00156739, 41657101) LOAEL = 1.9 mg/kg/day based on decreased body weight and food consumption in both males and females
Incidental Oral Short-term (1-30 days) Intermediate-term (1-6 months)	NOAEL = 0.5 mg/kg/day	Residential MOE = 1000	Reproductive toxicity study in rat (MRID 00141408) LOAEL = 2.4/3.0 mg/kg/day [M/F] based on decreased parental (male and female) body weight and body weight gain
Dermal Short-, Intermediate-, and Long-Term	NOAEL = 0.5 mg/kg/day 10% dermal absorption factor	Residential MOE = 1000 Worker MOE = 1000	Reproductive toxicity study in rat (MRID 00141408) LOAEL = 2.4/3.0 mg/kg/day

Inhalation Short-term (1-30 days) Intermediate-term (1-6 months)	NOAEL = 0.5 mg/kg/day 100% inhalation absorption factor	Residential MOE = 1000 Worker MOE = 1000	[M/F] based on decreased parental (male and female) body weight and body weight gain
Cancer (oral, dermal, inhalation)	Classification; No evidence of carcinogenicity		

UF = uncertainty factor, NOAEL = no observed adverse effect level, LOAEL = lowest observed adverse effect level, aPAD = acute population adjusted dose, cPAD = chronic population adjusted does, RfD = reference dose, MOE = margin of exposure, NA = Not Applicable

Rotenolenoids are common degradation products found in the parent plant material used to make piscicidal forms of rotenone. The EPA (2007) concluded these degradation products are no more toxic than the active ingredient.

The EPA analysis of acute dietary risk for both food and drinking water concluded;

> *"…When rotenone is used in fish management applications, food exposure may occur when individuals catch and eat fish that either survived the treatment or were added to the water body (restocked) prior to complete degradation. Although exposure from this route is unlikely for the general U.S. population, some people might consume fish following a rotenone application. EPA used maximum residue values from a bioaccumulation study to estimate acute risk from consuming fish from treated water bodies. This estimate is considered conservative because the bioaccumulation study measured total residues in edible portions of fish including certain non-edible portions (skin, scales, and fins) where concentrations may be higher than edible portions (tissue) and the Agency assumed that 100% of fish consumption could come from rotenone exposed fish. In addition, fish are able to detect rotenone's presence in water and, when possible, attempt to avoid the chemical by moving from the treatment area. Thus, for partial kill uses, surviving fish are likely those that have intentionally minimized exposure.*
>
> *Acute exposure estimates for drinking water considered surface water only because rotenone is only applied directly to surface water and is not expected to reach groundwater. The estimated drinking water concentration (EDWC) used in dietary exposure estimates was 200 ppb, the solubility limit of rotenone. The drinking water risk assessment is conservative because it assumes water is consumed immediately after treatment with no degradation and no water treatment prior to consumption.*

Acute dietary exposure estimates result in dietary risk below the Agency's level of concern. Generally, EPA is concerned when risk estimates exceed 100% of the acute population adjusted dose (aPAD). The exposure for the "females 13-49 years old" subgroup (0.1117 mg/kg/day) utilized 74% of the aPAD (0.015 mg/kg/day) at the 95th percentile (see Table 5). It is appropriate to consider the 95th percentile because the analysis is deterministic and unrefined. Measures implemented as a result of this RED will further minimize potential dietary exposure (see Section IV)"

As for evaluating the human chronic risk from exposure to rotenone treated water, the EPA acknowledges the four principle reasons for concluding there is a low risk: first, the rapid natural degradation of rotenone, second, using active detoxification measures by applicators such as potassium permanganate, third, properly following piscicide labels and the extra precautions stated in this document and finally, proper signing, public notification or area closures which limit public exposure to rotenone treated water.

As for recreational exposure, the EPA concludes no risk to adults who enter treated water following the application by dermal and incidental ingestion but requires a waiting period of 3 days after a treatment before toddlers swim in treated water. The aggregate risk to human health from food, water, and swimming does not exceed the EPA level of concern (EPA 2007). Recreationists in the area will likely not be exposed to the treatments because treatment areas will be closed to public access. Signs will be in place to warn recreationists that the streams are being treated with rotenone and closed to entry. Proper warning through news releases, signing the project area, temporary road closure, and administrative personnel in the project area should be adequate to keep recreationists from being exposed to any treated waters.

Fisher (2007) conducted an analysis of the inert constituent ingredients found in the rotenone formulation of CFT Legumine for the California Department of Fish and Game. These inert ingredients are principally found in the emulsifying agent Fennodefo[99] which helps make the generally insoluble rotenone more soluble in water. The constituents were considered because of their known hazard status and not because of their concentrations in the Legumine formulation. Solvents such as xylene, trichloroethylene (TCE), and tetrachloroethylene are residue left over from the process of extracting rotenone from the root and can be found in some lots of Legumine. However, inconsistent detectability and low occurrence in other formulations that used the same extraction process were below the levels for human health and ecological risk. Solvents such as toluene, n-butylbenzene, 1,2,4 trimethylbenzene, and naphthalene are present in Legumine, and when used in other applications can be an inhalation risk. However, because of their low concentrations in this formulation, the human health risk is low. The remaining constituents, the fatty acid esters, resin acids, glycols, substituted benzenes, and 1-hexanol were likewise present but either analyzed, calculated, or estimated to be below the human health risk levels when used in a typical fish eradication project.

Methyl pyrrolidone is also found in Legumine. It is known to have good solvency properties and is used to dissolve a wide range of compounds including resins (rotenone). Analysis of Methyl pyrrolidone in Legumine showed it represents about 9% of the formulation (Fisher 2007). The analysis concluded regarding the constituent ingredients in Legumine;

"…None of the constituents identified are considered persistent in the environment nor will they bioaccumulate. The trace benzenes identified in the solvent mixture of CFT Legumine™ will exhibit limited volatility and will rapidly degrade through photolytic and biological degradation mechanisms. The PEGs are highly soluble, have very low volatility, and are rapidly biodegraded within a matter of days. The fatty acids in the fatty acid ester mixture (Fennodefo99™) do not exhibit significant volatility, are virtually insoluble, and are readily biodegraded, although likely over a slightly longer period of time than the PEGs in the mixture.

None of the new compounds identified exhibit persistence or are known to bioaccumulate. Under conditions that will favor groundwater exchange, the highly soluble PEGs could feasibly transmit to groundwater, but the concentrations in the reservoir and the rapid biodegradation of these constituents makes this scenario extremely unlikely. Based upon a review of the physical chemistry of the chemicals identified, we conclude that they are rapidly biodegraded, hydrolyzed, and/or otherwise photolytically oxidized and that the chemicals pose no additional risk to human health or ecological receptors from those identified in the earlier analysis. None of the constituents identified appear to be at concentrations that suggest human health risks through water or ingestion exposure scenarios, and no relevant regulatory criteria are exceeded in estimated exposure concentrations…"

The Legumine Material Safety Datasheet states "…when working with an undiluted product in a confined space, use a non-powered air purifying respirator…and… air-purifying respirators do not protect workers in oxygen-deficient atmospheres…" It is not likely that workers will be handling Legumine in an oxygen deficient space during normal use. However, to guard against this, proper ventilation and safety equipment will be used according to the label requirements.

In their description of how South American Indians prepare and apply *Timbó,* a rotenone parent plant, Teixeira, et al. (1984) reported that the Indians extensively handled the plants during a mastication process, and then swam in lagoons to distribute the plant pulp. No harmful effects were reported. It is important to note that the primitive method of applying rotenone from root does not involve a calculated target concentration, metering devices, or involve human health risk precautions as those involved with fisheries management programs.

One study, in which rats were injected with rotenone for a period of weeks, reported finding lesions characteristic of Parkinson's disease (Betarbet et al. 2000). However, the relevance of the results to the use of rotenone as a piscicide have been challenged based upon the following dissimilarities between the experimental methodology used and fisheries related applications: (1) the continuous intravenous injection method used to treat the rats leads to "continuously high levels of the compound in the blood," unlike field applications where 1) the oral route is the most likely method of exposure, 2) a much lower dose is used and 3) potential exposure to rotenone is limited to usually only a matter of days because of the rapid breakdown of the rotenone following application. Further, dimethyl sulfoxide (DMSO) was used to enhance tissue penetration in the laboratory experiment (normal routes of exposure actually slow introduction of chemicals into the bloodstream), no such chemicals enhancing tissue penetration are present in the rotenone formulation proposed for use in this treatment. Similar studies (Marking 1988) have found no Parkinson-like results. Extensive research has demonstrated that rotenone does not cause birth defects (HRI 1982), gene mutations (Van Geothem et al. 1981; BRL 1982), or cancer (Marking 1988). Rotenone was found to have no direct role in fetal development of rats that were fed high concentrations of rotenone. Spencer and Sing (1982) reported that rats that were fed diets laced with 10-1,000 ppm rotenone over a 10-day period did not suffer any reproductive dysfunction. Typical concentrations of actual rotenone used in fishery management range from 0.025 to 0.50 ppb (1 ppm product) and are far below that administered during most toxicology studies.

A recent study linked the use of rotenone and paraquat with the development of Parkinson's disease (PD) in humans later in life (Tanner et al. 2011). The after the fact study included mostly farmers from 2 states within the United States who presumably used rotenone for terrestrial application to crops and/or livestock. Rotenone is no longer approved for agricultural uses and is only approved for aquatic application as a piscicide. The results of epidemiological studies of pesticide exposure, such as this one, have been highly variable (Guenther et al. 2011). Studies have found no correlations between pesticide exposure and PD (e.g., Jiménez-Jiménez 1992; Hertzman 1994; Engel et al. 2001; Firestone et al. 2010), some have found correlations between piscicide exposure and PD (e.g., Hubble et al. 1993; Lai et al. 2002; Tanner et al. 2011), and some have found it difficult to determine which piscicide or piscicide class is implicated if associations with PD occur (e.g., Engel et al. 2001; Tanner et al. 2009). Recently, epidemiological studies linking pesticide exposure to PD have been criticized due to the high variation among study results, generic categorization of pesticide exposure scenarios, questionnaire subjectivity, and the difficulty in evaluating the causal factors in the complex disease of PD which may have multiple causal factors (age, genetics, environment) (Raffaele et al. 2011). A specific concern is the inability to assess the degree of exposure to certain chemicals, including rotenone, particularly the concentration of the chemical, frequency of use, application (e.g., agricultural, insect removal from pets), and exposure routes (Raffaele et al. 2011). No information is given in the Tanner et al. (2011) study about the formulation of rotenone used (powder or liquid) or the frequency or dose farmers were exposed to during their careers. There is also no information given about the personal protective equipment used or any information about other piscicides farmers were exposed to during the period of the study. It is also unclear in the Tanner et al. (2011) study the frequency and the dose individuals were exposed to during the time period of use. Without information on how much rotenone individuals were exposed to and for how long, it is difficult to evaluate the potential risk to humans of developing Parkinson's disease from aquatic applications of rotenone products.

The State of Arizona conducted an exhaustive review to the risks to human health of rotenone use as a piscicide (Guenther et al. 2011). They concluded: "To date, there are no published studies that conclusively link exposure to rotenone and the development of clinically diagnosed PD. Some correlation studies have found a higher incidence of PD with exposure to pesticides among other factors, and some have not. It is very important to note that in case-control correlation studies, causal relationships cannot be assumed and some associations identified in odds-ratio analyses may be chance associations. Only one study (Tanner et al. 2011) found an association between rotenone and paraquat use and PD in agricultural workers, primarily farmers. However, there are substantial differences between the methods of application, formulation, and doses of rotenone used in agriculture and residential settings compared with aquatic use as a piscicide, and the agricultural workers interviewed were also exposed to many other pesticides during their careers. Through the EPA re-registration process of rotenone, occupational exposure risk is minimized by new requirements that state handlers may only apply rotenone at less than the maximum treatment concentrations (200 ppb), the development of engineering controls to some of the rotenone dispensing equipment, and requiring handlers to wear specific PPE."

It is clear that to reduce or eliminate the risk to human health, including any potential risk of developing Parkinson's disease, public exposure to rotenone treated water must be eliminated to the extent possible. To reduce the potential for exposure of the public during the proposed use of CFT Legumine to restore WCT, areas treated with rotenone will be closed to public access during the treatment. Signs will be placed at access points informing the public of the closure and the presence of rotenone treated waters. Personnel will be onsite to inform the public and escort them from the treatment area should they enter. Rotenone treated waters will be limited to the proposed treatment areas by adding potassium permanganate to the stream at the downstream end of the treatment reach (fish barrier). Potassium permanganate will neutralize any remaining rotenone before leaving the project area. The efficacy of the neutralization will be monitored using fish (the most sensitive species to the chemical) and a hand held colorimeter. Therefore, the potential for public exposure to rotenone treated waters is very minimal. The potential for exposure will be greatest for those government workers applying the chemical. To reduce their exposure, all CFT Legumine label mandates for personal protective equipment will be adhered to (see Comment 8a).

CUMULATIVE IMPACTS

Proposed Action: Alternative 2

Health hazards from the proposed action would be short term and mitigated through closure of treatment areas to public and use of proper safety equipment, etc. Because rotenone in all formulations including CFT Legumine breaks down quickly and does not bioaccumulate, there should be no long-term or cumulative impacts of the application of the piscicide. FWP does not expect the proposed action to result in other actions that would increase the risk of health hazards in the streams proposed for WCT restoration. FWP does not foresee any other activities in the basin that would add to health impacts of the proposed action. As such there are no cumulative impacts related health hazards from the proposed treatment.

+9. COMMUNITY IMPACT Will the proposed action result in:	Impact Unknown	No Impact	Impact Minor	Impact Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?		X				
b. Alteration of the social structure of a community?		X				
c. Alteration of the level or distribution of employment or community or personal income?		X				
d. Changes in industrial or commercial activity?		X				
e. Increased traffic hazards or effects on existing transportation facilities or patterns of movement of people and goods?		X				

DIRECT and INDIRECT IMPACTS

Proposed Action: Alternative 2

Under this alternative there will be a short period of time during piscicide treatment that access to Tepee Creek will be inaccessible (no more than two weeks). Additionally, Tepee Creek, will be fishless for 2-3 years post treatment with piscicides.

CUMULATIVE IMPACTS

Proposed Action: Alternative 2

Under this alternative there would be no cumulative impacts to the surrounding community from the treatment of the project area with piscicides.

10. PUBLIC SERVICES/TAXES/UTILITIES Will the proposed action result in:	Impact Unknown	No Impact	Impact Minor	Impact Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Will the proposed action have an effect upon or result in a need for new or altered governmental services in any of the following areas: fire or police protection, schools, parks/recreational facilities, roads or other public maintenance, water supply, sewer or septic systems, solid waste disposal, health, or other governmental services? If any, specify: ____________		X				
b. Will the proposed action have an effect upon the local or state tax base and revenues?		X				
c. Will the proposed action result in a need for new facilities or substantial alterations of any of the following utilities: electric power, natural gas, other fuel supply or distribution systems, or communications?		X				
d. Will the proposed action result in increased used of any energy source?		X				
e. Define projected revenue sources		X				
f. Define projected maintenance costs		X				

DIRECT and INDIRECT IMPACTS

Proposed Action: Alternative 2

No Impacts

CUMULATIVE IMPACTS

Proposed Action: Alternative 2

No Impacts

11. AESTHETICS/RECREATION Will the proposed action result in:	Impact Unknown	No Impact	Impact Minor	Impact Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Alteration of any scenic vista or creation of an aesthetically offensive site or effect that is open to public view?		X				
b. Alteration of the aesthetic character of a community or neighborhood?		X				
c. Alteration of the quality or quantity of recreational/tourism opportunities and settings? (Attach Tourism Report)			X			11c
d. Will any designated or proposed wild or scenic rivers, trails or wilderness areas be impacted? (Also see 11a, 11c)		X				See 11c
e. impacts to wilderness character?		X				

DIRECT and INDIRECT IMPACTS

Proposed Action: Alternative 2

Comment 11c: Trails accessing Tepee Creek would be closed during the application of rotenone (< 7 days).   The timing of the project in late summer/early fall should avoid the busiest times of year avoid any conflicts with hunters and/or outfitters in the drainage.

There would be a temporary loss of angling opportunity in Tepee Creek between the time of treatment and for several years after until introduced fish grow to catchable size. The proposed Tepee Creek project is on National Forest land. However, all the tributaries that form Tepee Creek are small and receive little angling pressure. Further, there are adjacent streams and areas downstream of the project area that would provide similar angling alternatives. Similar projects in Montana have shown that Tepee Creek should be fully colonized with WCT within 5 years of project implementation and should provide the same angling opportunity to catch wild trout as pretreatment. The current regulations allow harvest of one WCT in the Central District of Montana.

CUMULATIVE IMPACTS

Proposed Action: Alternative 2

Impacts to recreation and aesthetics from the proposed action will be short term and minor. FWP does not expect the proposed action to result in other actions that will impact recreation/aesthetics in the stream proposed for WCT restoration. FWP does not foresee any other activities in the basin that will add to impacts of the proposed action. As such there are no cumulative impacts to recreation/aesthetics from the proposed action.

12. HISTORICAL RESOURCES Will the proposed action result in:	Impact Unknown	No Impact	Impact Minor	Impact Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Destruction or alteration of any site, structure or object of prehistoric, historic, or paleontological importance?		X				
b. Physical change that will affect unique cultural values?		X				
c. Effects on existing religious or sacred uses of a site or area?		X				
d. Will the project affect historic or cultural resources?		X				

DIRECT and INDIRECT IMPACTS

Proposed Action: Alternative 2

No Impacts

CUMULATIVE IMPACTS

Proposed Action: Alternative 2

No Impacts

13. SUMMARY EVALUATION OF SIGNIFICANCE Will the proposed action, considered as a whole:	Impact Unknown	No Impact	Impact Minor	Impact Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Have impacts that are individually limited, but cumulatively considerable? (A project or program may result in impacts on two or more separate resources which create a significant effect when considered together or in total.)		X				
b. Involve potential risks or adverse effects which are uncertain but extremely hazardous if they were to occur?		X				
c. Potentially conflict with the substantive requirements of any local, state, or federal law, regulation, standard or formal plan?		X				
d. Establish a precedent or likelihood that future actions with significant environmental impacts will be proposed?		X				
e. Generate substantial debate or controversy about the nature of the impacts that will be created?			X		Yes	13e
f. Is the project expected to have organized opposition or generate substantial public controversy? (Also, see 13e)			X			13f
g. List any federal or state permits required.						13g

Comments 13e and f: The use of piscicide can generate controversy. Public outreach and information programs can inform the public on the use of pesticides. It is not known if this project will have organized opposition. Similar projects proposed and implemented in have had limited opposition, but they also had substantial support.

Comment 13g: The following permits for piscicide application would be required:

MDEQ Pesticide General Permit NDPES Discharge Permit for application of CFT Legumine.

USDA Forest Service Pesticide Use Authorization Form

PART IV. OVERLAPPING AGENCY JURISDICTION

Name of Agency and Responsibility

- Montana Department of Environmental Quality – NDPES Discharge Permit for application of CFT Legumine, 318 Permit for temporary increase in turbidity during barrier construction.
- US Forest Service, Custer Gallatin National Forest – authorization of the pesticides and motorized/mechanized equipment (if needed) within the Lee Metcalf Wilderness Area and temporary trail and area closures during the various treatments.
- Army Corps of Engineers – 404 Permit for placement of fill in wetlands.
- Department of Natural Resources and Conservation – 310 Permit for construction of fish barrier (Gallatin Conservation District).

PART V. AGENCIES THAT HAVE CONTRIBUTED OR BEEN CONTACTED

Montana Department of Environmental Quality
Montana Department of Fish, Wildlife & Parks
US Army Corps of Engineers
Montana Natural Heritage Program
Montana State Historic Preservation Office
US Forest Service, Custer Gallatin National Forest, Bozeman Ranger District

PART VI. ENVIRONMENTAL IMPACT STATEMENT REQUIRED?

After considering the potential impacts of the proposed action and possible mitigation measures, FWP has determined that an Environmental Impact Statement is not warranted. The impacts of WCT restoration as described in this document are minor and/or temporary and mitigation for many of the impacts is possible. The negative impacts as a result of this project are temporary impacts through the use of mechanized equipment, temporary reductions in aquatic invertebrate abundance as a result of toxic effects of rotenone, increased personnel presence during application of rotenone, and short-term closures of the project stream and associated trails. Impacts to aquatic invertebrates have been shown to be short term with rapid recovery of stream biomass. Invertebrate biomass will return to pre-treatment levels in approximately one year or less. Mitigation measures such as not treating sections of stream that do not contain fish but do contain aquatic invertebrates should reduce these impacts. Further, the benefit to native WCT, a species in need of conservation, will balance the potential short-term negative impacts to other species.

PART VII. PUBLIC PARTICIPATION

Public Involvement

Public scoping:

- Public scoping notices were mailed to adjacent landowners and interested parties;
- Two comments were received during the 30 day scoping period. One comment supported the project and one did not.

The non-supporting comment letter cited the recent treatment of Grayling Creek and a reduced recreational fishery.

Response: A reduced fishery in Grayling Creek should be temporary. Treatment of Tepee Creek would require deactivation of rotenone with potassium permanganate. As per FWP policy, no rotenone should pass the 30-minute travel time mark below the point of detoxification.

The commenter also indicated there are a lot of other places other than the Grayling Creek drainage that could be used for these experiments.

Response: FWP actively seeks out potential project areas based on the potential for a fish barrier. These opportunities are rare, especially sites conducive to blasting. Construction of a concrete fish barrier, depending on size can cost upwards of $250,000; in this project, total blasting costs would be less than $10,000. The remoteness of Tepee Creek also mitigates the risk of intentional or unintentional sabotage through illegal movement of non-native trout.

- Public scoping notices were posted on the FWP webpage (*http://fwp.mt.gov*) and the Custer Gallatin National Forest webpage (Schedule of Proposed Actions) from Spring 2016 to Summer 2017.

Public notification of the EA release and opportunities will be through the following media:

- Legal Notice posted in the *Bozeman Daily Chronicle;*
- Notification letters sent out to all responding to the initial scoping letter;
- Public notification via MFWP's webpage (*http://fwp.mt.gov*) and the Custer Gallatin National Forest webpage (http://www.fs.usda.gov/projects/custergallatin/landmanagement/projects).

Copies of this EA will be available for public review at FWP Region 3 Headquarters at 1400 South 19th Avenue, Bozeman, MT 59718

Public Comment Period

The public comment period will extend from 30 days beginning March 19, 2019 and ending April 17, 2019. Send comments to:

Montana Fish, Wildlife & Parks
c/o Tepee Creek WCT Restoration
1400 South 19th Avenue
Bozeman, MT 59718

Or via email to: davemoser@mt.gov

If you choose to submit comments regarding the Forest Service's portion of the project, please note the following:

Written comments shall include your name, address, and (if possible) telephone number; title of the document on which you are commenting; and specific facts or comments along with supporting reasons that you believe the Responsible Official should consider in reaching a decision.

Individuals and entities (non-governmental organizations, businesses, partnerships, state and local governments, Alaska Native Corporations, and Indian Tribes) who have submitted timely, specific written comments regarding a proposed project or activity during any designated opportunity for public comment may file an objection. Opportunity for public comment on an Environmental Assessment includes: during scoping, the 30-day public review above or any other instance where the responsible official seeks written comments.

Written comments are those submitted to the responsible official or designee during a designated opportunity for public participation provided for a proposed project. In order to have standing to file an Objection, specific written comments should be within the scope of the proposed action, have a direct relationship to the proposed action, and must include supporting reasons for the responsible official to consider.

Comments received through the U.S. Postal Service must be postmarked no later than the end of the 30-day comment period. All other comments, including e-mail, fax, and personal delivery must be received by COB (4:30 p.m.) at the at the above address by the end of the 30-day comment period. It is the responsibility of all individuals and organizations to ensure their comments are received in a timely manner.

Additionally, pursuant to 7 CFR 1.27(d), any person may request the agency to withhold a submission from the public record by showing how the Freedom of Information Act (FOIA) permits such confidentiality. Persons requesting such confidentiality should be aware that, under the FOIA, confidentiality may be granted in only very limited circumstances, such as to protect trade secrets. The Forest Service will inform the requester of the agency's decision regarding the request for confidentiality and, where the request is denied, the agency will return the submission and notify the requester that the comments may be resubmitted with or without names and addresses."

Prepared by: David Moser and Travis Lohrenz, R3 Fisheries
Submit written comments to:

Montana Fish, Wildlife & Parks
c/o Tepee Creek WCT Restoration
1400 South 19th Avenue
Bozeman, MT 59718

Or via email to: davemoser@mt.gov

Comment period is 30 days. Comments must be received by April 17, 2019.

PART VII. REFERENCES

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